

REMARKS

Reconsideration of this application is respectfully requested in view of the above amendments and the remarks contained herein.

STATUS OF CLAIMS AND SUPPORT FOR AMENDMENTS

Upon entry of this amendment, claims 1-5, 8-13 and 15 will be pending in this application.

Applicant has rewritten claim 15 to place it into independent form.

WITHDRAWN REJECTIONS

Applicants note with appreciation the withdrawal of the rejections under 35 U.S.C. § 102(b) and 103(a) indicated at page 2 of the Office action dated January 25, 2010.

OBVIOUSNESS REJECTIONS

A. Claims 1, 5, 8-12, and 15 Hyvärinen et al. in view of Cupertino et al.

On pages 3-7 of the Office action dated January 25, 2010, the Office has rejected claims 1, 5, 8-12, and 15 under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 6,007,600 (Hyvärinen et al.) in view of U.S. Patent No. Re 36,118 (Cupertino et al.). Applicants respectfully traverse this rejection for the reasons given below.

The Office action states:

Regarding claim 1, US'600 teaches a method for producing copper in a hydrometallurgical process from copper-bearing raw material. The copper-bearing solution obtained from the leaching is subjected to reducing and solution purification (Abstract of US'600). US'600 teaches monovalent copper in a chloride-base solution (Col.2, lines 44-67 of US'600), which reads on the removal of one or more metal impurities in chloride-base copper recovery process comprising monovalent copper as recited in the instant claim. US'600 teaches that impurities of the CuCl-

NaCl solution are removed by using known reagents (Co1.3, lines 59-63 of US'600).

Office action dated January 25, 2010 at page 3. The Office admits that Hyvärinen et al. is deficient in at least one respect with regard to Applicant's claims, stating:

US'600 does not specify apply chelating ion-exchange resin to remove one or more metal impurities. US'118 teaches a method for separating a metal selected from the group of magnesium, copper, titanium, iron, zinc from an organic complex thereof (Col.I, lines 8-10 of US'118).

Office action dated January 25, 2010 at page 3. In an attempt to cure this deficiency, the Office relies on Cupertino et al., stating:

US'118 teaches applying a chelating ring resin to extract the metal from the aqueous solution in the form of a complex of the metal and the extractant (Col.1, lines 11-19, examples 5-6 of US'118, and claims 1-10), which reads on the method of removal impurities by contact an aqueous with a chelating ion-exchange resin and removing the metal impurities from said solution using said chelating ion-exchange resin. US'118 teaches that the compound of organic phase are valuable for the selective extraction of antimony and /or bismuth contaminants from the highly acidic solutions used in copper refining (Co1.3, lines 19-27 of US'118), which reads on the limitation of the chelating ionexchange resin binding one or more metal impurities and not binding copper in the instant claim.

Office action dated January 25, 2010 at page 4. From this, the Office concludes that Applicants claimed invention would have been obvious to one having ordinary skill in this art:

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply chelating ion-exchange resin to remove metal impurities as demonstrated by US'118 in the process of US'600 because US'118 teaches the method is particularly effective for the recovery of metals include chromium, manganese, cobalt and copper (Co1.4, lines

60-66 of US'118).

Office action dated January 25, 2010 at page 4.

First, Applicant has addressed the combined teachings of Hyvärinen et al. and Cupertino et al. in the response filed on October 1, 2009 at pages 14-17.

Reshuffling the references and restating the rejection with the references in a different order does not change these combined teachings. This is particularly true with regard to claims 10-12.

Second, as Applicant has previously explained, the precipitation described at column 4, lines 3-19 of Hyvärinen et al. is the precipitation of monovalent copper, not of impurities from the monovalent copper-containing stream. Again, the Office cites a reference that does the opposite of what Applicant is claiming, and relies on such a reference to allege that Applicant's claims are unpatentable. Even if it were proper to combine Hyvärinen et al. with Cupertino et al. (which Applicant does not admit), the result would not be Applicant's invention because there is no disclosure of any monovalent copper in Cupertino to be precipitated out. Even if there were such a disclosure, there is no suggestion in either reference to precipitate out the monovalent copper before treatment with an ion exchange resin. For at least this reason, Applicant respectfully submits that the Office has failed to establish a *prima facie* case of obviousness, and that this rejection should be withdrawn. As pointed out in the response of October 1, 2009, the Office has failed to adequately address Applicant's arguments that the combined teachings of the Hyvärinen et al. and Cupertino et al. references do not result in Applicant's claimed invention. Reversing the primary and secondary references does not constitute an answer to this argument. As requested in the October 1, 2009 response, Applicant requests that

the Office fully and completely answer Applicant's arguments in the next Office action, rather than waiting until an Appeal process is underway to address the arguments, as sometimes happens in these situations. Moreover, Applicant requests that, in the event that the Office persists in making these rejections, the Office make the next action non-final, since (assuming that the Office answers Applicant's arguments therein), this will be the first time that Applicant has had the benefit of the Office's position with respect to Applicant's arguments.

For example, the Office asserts that it would have been obvious to use the chelating ion-exchange resin of Cupertino et al. to remove "metal impurities" in "the process of" Hyvarinen et al. What the Office fails to explain is what these metal impurities are. Hyvarinen et al., at column 3, lines 54-63 (the portion cited by the Office) does not identify them. The Office also fails to explain how it knows that these unidentified impurities are of a type that is suitable for removal by the ion exchange resin of Cupertino et al., particularly where Hyvarinen et al. suggests that these unidentified impurities can be precipitated out at pH values lower than that corresponding to precipitation of Cu_2O "by means of products obtained from the later stages of the process (i.e. granular copper 8 and sodium hydroxide 13 formed in the chlorine-alkali electrolysis 12." The Office has not explained why, if the impurities have already been removed by precipitation with granular copper and/or sodium hydroxide, it would have been necessary or even desirable to treat the resulting stream with the chelating ion-exchange resin of Cupertino et al. The Office has not even identified any particular impurity that would remain after the treatment specified in Hyvarinen et al., much less an impurity that would remain and be susceptible by treatment with the chelating resin of Cupertino et al. Applicant submits that the

Office rationale for combining the reference teachings appears to be based on pure conjecture, rather than on any motivation to solve a particular problem disclosed in the references themselves or by the commercial environment in which these processes are conducted. This is not the appropriate standard for assessing obviousness. See *KSR International Co. v. Teleflex Inc.*, 550 U.S. _____, _____, 82 USPQ2d 1385, 1397 (2007).

Third, the Office does not explain where in either of the references it is taught or suggested that the use of organic complexes of Cupertino et al. is a suitable replacement for, or addition to, the precipitation techniques already disclosed as suitable by Hyvärinen et al. Moreover, as the Office has demonstrated by its citation to Example 4 of Cupertino et al., the Cupertino et al. disclosure is primarily devoted to the use of organic extraction solutions to remove metals. The Office has yet to explain why one having ordinary skill in this art would have, in particular, selected the ion exchange resin embodiment of Cupertino et al. for use with the (unspecified) metal contaminants of Hyvärinen et al.

With respect to claim 15, the Office states:

Regarding claim 15, US'600 does not specify the amount of monovalent copper content of 30-100g/l as recited in the instant claim, US'118 teaches an acid strength of up to 0.5 molar above the stoichiometric requirement for stripping the metal whereby said complex is decomposed and metal ions are transferred to the aqueous solution (Claim 1 of US'118, 0.5 molar copper is about 32g/l—noted by examiner, also refer to the example 4 of US'118).

Office action dated January 25, 2010 at pages 6-7. The Office's reliance on Example 4 of Cupertino et al. does not support the Office's assertions. The aqueous solution of Cupertino et al. contains only 1 g/L of one of the metals, each of which is

divalent or trivalent, and uses an organic extraction solution, not an ion exchange resin. The Office has yet to explain what possible relevance the teachings about acid strength provided by this example have to a completely different system for separating a metal impurity from monovalent copper (i.e., from a mixture of two metal ions) using a completely different separation technique (i.e., a chelating ion exchange resin) as recited in claim 15. Applicant submits that the Office should either provide such an explanation or withdraw this rejection.

For these reasons, Applicants respectfully submit that the Office has failed to establish a *prima facie* case of obviousness, and that this rejection should be withdrawn.

B. Claims 2-4 and 13 Hyvärinen et al. in view of Cupertino et al., and further in view of Partridge

On pages 7-8 of the Office action dated January 25, 2010, the Office has rejected claims 2-4 and 13 under 35 U.S.C. § 103(a) as obvious over Hyvärinen et al. in view of Cupertino et al., and further in view of U.S. Patent No. 6,165,367 (Partridge). Applicants respectfully traverse this rejection for the reasons given below.

With respect to claims 2-4, the Office action states:

Regarding claims 2-4, US'118 teaches that it is known in the arts that the organic complex is produced from an aqueous solution of metal salt with a chelating resin. This point is further evidenced by US'367. US'367 teaches a method for selectively removing a heavy metal from an aqueous waste streams and more particularly to methods for reducing the heavy metal content in the waste stream to sub-ppm level (Co1.1, Line 5-9 of US'367). US'367 teaches: "...providing a chelating resin containing amino-phosphonic group for capturing the heavy metal ions...."; "...wherein the chelating resin is a styrene divinylbenzene copolymer..."

(Claims 1-4 of US¹367); US'367 teaches the resin' group can be "represented as: -NH-CH₂-P03Na₂" (Col.2, Line 22-37); and US'367 also tests "...a chelating resin with iminodiacetic acid functional group..." (Col.4, Line 38-41). Compared with the instant invention, US'367 overlaps the limitations related to chelating ion-exchange resin recited in the instant claims 2-4. The similar hydrometallurgical process to extract heavy impurities with the similar ion exchange resin taught by US'367 renders prima facie obvious. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to choose a suitable ionexchange resin as demonstrated in US'367 in the process of US'600 in view of US'118.

Office action dated January 25, 2010 at pages 7-8.

With respect to claim 13 the Office action states:

Regarding claim 13, US'600 teaches that the reduced granular or pulverous copper product is further subjected to melting and casting in order to produce commercial-grade copper (Col.I, lines 17-20 of US'600). US'367 teaches "methods for selectively removing a heavy metal from an aqueous waste streams and more particularly to methods for reducing the heavy metal content in the waste steam to sub-ppm level." (Col.', Line 5-9, this metal impurity level is compatible with the level that recited by instant invention—refer to the instant claim 12). This means it would have been obvious to one of ordinary skill in the art to get "cathode copper LME-A grade copper" as demonstrated in US'367 in the process of US'600 in view of US'118.

Applicant notes that the Office has previously rejected the claims over Cupertino et al. in view of Partridge. Applicant incorporates by reference the arguments made at pages 11-14 of the response filed October 1, 2009, and submits that Hyvarinen et al. fails to cure the deficiencies in Cupertino et al. and Partridge noted therein.

Moreover, changing the ordering of the references in the statement of rejection does not change their lack of disclosure of the elements of Applicant's

claims. Viewed in this way, Partridge does not cure the deficiencies of Hyvärinen et al. and Cupertino et al. noted above with respect to claims 1, 5, 8-12, and 15.

For these reasons, Applicants respectfully submit that the Office has failed to establish a *prima facie* case of obviousness, and that this rejection should be withdrawn.

CONCLUSION

Applicants submit that this application is in condition for immediate allowance, and an early notification to that effect is respectfully requested. If the Examiner has any questions about this application, or believes that any issues remain to be resolved, the Examiner is respectfully requested to contact the undersigned to arrange for a personal or telephonic interview to resolve these issues prior to the issuance of another Office action.


The Director is hereby authorized to charge any appropriate fees under 37 C.F.R. §§ 1.16, 1.17 and 1.20(d) and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 02-4800.

Respectfully submitted,

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